REMARKS

Favorable reconsideration and allowance of this application are requested.

1. Discussion of Amendments

By way of the amendment instructions above, original claims 1-26 have been cancelled without prejudice or disclaimer to the applicants' rights to pursue such subject matter by way of a timely filed continuing application, and new claims 27-118 have been presented in their stead. Newly presented independent claims 27, 63 and 92 are in independent format while the remaining claims depend directly or indirectly from one of the newly presented independent claims.

It will be observed that each new independent claim -- i.e., new claims 27, 63 and 92 – defines that the oil comprises at least 35% of a desired C20 or C22 PUFA. Basis for the 35% recitation is found on page 12, line 9 of the originally filed specification while the basis for the C20 or C22 recitation can be found on page 11, line 8 thereof. Furthermore, the contents of former claim 2 are incorporated into the definition of new claim 27.

Newly presented independent claim 27 further defines that the oil has an anisidine value of less than 20 (basis in previously filed original dependent claim 20, and at page 14, lines 3-4 of the specification).

Newly presented independent claim 63 is similar to claim 27 but further includes the subject matter of original claim 14.

Newly presented independent claim 92 is similar to claim 27 but further includes the subject matter of original claim 3.

A new set of dependent claims has been added that is based on the prior filed original claims and on various passages in the specification as originally filed, for

example page 9, lines 5-6 (deaeration results in dissolved oxygen concentration of less than 5 ppm and 2 ppm) and page 11, line 28 (*Mortierella alpina* cells).

Therefore, following entry of this amendment claims 27-118 will be pending herein for which favorable reconsideration on the merits is solicited.

2. Response to Formality Objections and Rejections Under 35 USC §112

The new claims presented herewith are believed to address all of the objections and rejections advanced under 35 USC §112, second paragraph. Withdrawal of the same is therefore solicited.

3. Response to 35 USC §103(a) Rejection

The only further issue remaining to be resolved in this application the rejection of prior claims 1-26 under 35 USC §103(a) as allegedly "obvious" and hence unpatentable over Bijl et al (WO 97/37032, hereinafter "R1") in view of Baugh et al (USP 4,970,167, hereinafter "R2"). As will become evident from the following discussion, all presently pending claims are patentably *un*obvious over such references.

Specifically, applicants note that pending independent claims 27, 63 and 92 patentably differ from R1 at least in that R1 does not disclose an oil comprising at least 35% of a desired C20 or C22 PUFA. In this regard it is noted that the highest PUFA level disclosed in R1 is 32.6% of DHA (page 42, example 19, line 33). The oxidative stability of this DHA-oil is not described. Example 23, referred to by the Examiner is silent on the PUFA content.

R2 does not even relate to PUFAs, and accordingly self-evidently does not disclose an oil comprising at least 35% of a desired C20 or C22 PUFA.

Accordingly, the combination of references R1 and R2 does not "obviously" result in the claimed invention for at least these reasons. There are however additional reasons for patentability of the pending claims over R1 and R2 as discussed below.

Microbial oils having a concentration of at least 35% of a C20 or C22 PUFA are highly sensitive to oxidation due to the high concentration of C20 or C22 PUFAs in the oil, and the corresponding high concentration of double bonds in the oil. The presently claimed invention thus provides a process that allows an oil to be obtained having a high PUFA content (i.e. at least 35%) as well as a high oxidative stability (as expressed by the anisidine value < 20). It is surprisingly found that the high stability can be achieved, even for oils having such high C20 or C22 PUFA contents, by the claimed deaeration step.

The surprising results discussed above are evident in the examples if the originally filed specification.

In this regard, the Examiner is invited to consider comparative example 1 wherein no deaeration was performed (see page 17, lines 9-10). In examples 2, 3 and 4 according to the invention, however, deaeration was applied. Table 1 shows that by applying deaeration, the quality of the oil was improved significantly as expressed by lower values for the anisidine value (AnV) for the oil prepared according to the claimed invention (examples 2,3 and 4) including the deaeration step compared to the oil without the deaeration step (comparative example 1).

It is therefore submitted that the claimed invention is non-obvious over R1 and R2, because:

(i) there is no teaching that deaerating and lowering the dissolved oxygen content in the aqueous liquid improves the oxidative stability of the oil;

(ii) there is no teaching or suggestion that an oil having the combination of the claimed high PUFA content and a low anisidine value can be obtained; and

(iii) the combination of R1 and R2 does not result in the claimed invention

It is thus submitted that R2 cannot render obvious the claimed invention, since, R2 does not relate to the isolation of oils or polyunsaturated fatty acids (PUFAs). R2 only discloses the isolation of proteins, see col. 5, lines 8 – 10. Hence, R2 does not provide any teaching at all that the quality of a PUFA-containing oil can be improved by a deaeration step.

Moreover, R2 is not at all concerned with the problem of quality and oxygen-induced degradation of the product to be isolated. R2 is concerned with the problem of defoaming, and to degas a foamed fermentation broth without the use of defoaming agents (see col. 2, lines 29-59). This has nothing to do with improving the quality of an oil or a PUFA.

Since R2 does not even relate to oils or PUFAs the skilled person does have any motivation to consult R2. Even if he would do so, however, such a person would not find any suggestion in R2 that the deaeration results in an improved quality of the oil and PUFA.

Furthermore, as explained in the originally filed specification (page 2, line 27 to page 3, line 3), it is not immediately apparent that removal of oxygen would be advantageous, because of course the microbial cells require oxygen in order to be able to survive and grow. Indeed, in many fermentation processes, including the preferred processes of the invention, air is supplied to the microbial cells, for example supplied to (such as bubbled into) the aqueous liquid, or culture medium. The cells will divide and grow, and preferably in so doing will also biosynthesize one or more PUFAs. The idea of deaeration would not be necessarily thought to be an advantageous strategy

because this might result in the cells dying, or at the very least their ability to produce PUFAs and other valuable compounds might be compromised.

In view of the above amendments and remarks, therefore, it is respectfully submitted that the claimed invention is non-obvious over the applied R1 and R2 references. Early receipt of the Official Allowance Notice is therefore solicited.

4. Fee Authorization

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140.

Respectfully submitted,

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